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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/567,308	08/22/2006	Volker Hoellein	2003DE126	4981

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CLARIANT CORPORATION
INTELLECTUAL PROPERTY DEPARTMENT
4000 MONROE ROAD
CHARLOTTE, NC 28205

EXAMINER

ABRAHAM, AMJAD A

ART UNIT	PAPER NUMBER
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1791

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/567,308	Applicant(s) HOELLEIN ET AL.	
	Examiner AMJAD ABRAHAM	Art Unit 1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 February 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>04/04/2006 and 08/22/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: The specification may not contain flow diagrams. Applicant must delete reference to the flow diagrams in the specification or add drawings to this application. **See MPEP 608.01 and 37 CFR 1.58 (a).**

Appropriate correction is required.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
2. Claim 4 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. **The limitation “twin screw locks” is unclear as applicant failed to adequately describe with clarity as to what “twin screw locks” teaches. Applicant’s description only indicates that water (or solvent) is removed from the extrusion system by the twin-screw locks. Examiner has interpreted “twin screw locks” to stand for any mechanism used for liquid extraction which uses screws to compress and extract the liquid (solvent or water) from the pigment masterbatch.**

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Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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6. *Claims 1-4, 6-8, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jones (European Patent Application EP 0 478 987 A2) in view of Kobayashi et al. (USP No. 6,220,745).*

7. Regarding claim 1, Jones teaches a process for adding a pigment (colorant) to a polymeric melt utilizing a multi zone metering process. **(See Abstract and column 5 lines 53-58).**

a. Jones further teaches the steps of:

i. Metering a thermoplastic resin into a twin-screw extruder. **(See abstract and column 5 lines 53-55).**

ii. Wherein the resin is molten. **(See column 2 lines 33-38 and abstract, disclosing the polymeric melt.)**

iii. Then metering an additive which can be a pigment (with water) and is in the liquid phase (aqueous). **(See abstract and column 5 lines 53-55).**

(1) *See specifically column 4 lines 24-34, disclosing that the aqueous dispersant may be a pigment press cake mixed with a dispersant containing water.*

iv. Possibly adding a flow improver (processing aid; **(See column 3 lines 23-28).**

v. Mixing the pigment into the molten polymer by shear forces; **(See column 5 lines 3-11, disclosing the use of a twin screw extruder to mix the polymer.)**

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vi. Removing the volatiles (water or solvent); **(See abstract).**

(2) *Also see column 6 lines 18-27, disclosing wherein the water is removed downstream.*

vii. Extruding (discharging) the pigment/polymer melt from the extruder. **(See abstract).**

viii. Cooling and then cutting the polymer melt to obtain chips. **(See column 5 lines 26-31.)**

b. With respect to claim 1, Jones does not teach wherein the solvent and/or water from the pigment additive is kept at a pressure which will keep the water/solvent in a liquid phase from introduction into the extruder until the removal of the solvent/water.

c. However, Kobayashi teaches that solvents can be extracted from an extruder while in a liquid phase. **(See column 1 line 54 to column 2 line 29).**

ix. Kobayashi teaches the use of liquid extraction in conjunction with an extrusion process. Specifically, Kobayashi teaches a squeezing method which uses a screw arrangement to compress the molten polymer/water solution in order to extract the water from the system.

x. Furthermore, it would have been obvious to control the pressure of an extruder by utilizing a pump or a control valve in order to ensure that the pressure of the solvent/water is high enough to stay in the liquid phase after entrance into the extrusion system.

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- d. Jones and Kobayashi are analogous art because they are from the same field of endeavor which is using a twin screw extruder to effectuate a polymer melt. At the time of the invention, it would have been obvious to one having the ordinary skill in the art, having the teachings of Jones and Kobayashi before him or her, to modify the teachings of Jones to include the teachings of Kobayashi for the benefit of uniformly mixing the pigment with the polymer. The motivation for doing so would be to allow for uniform dispersment of the pigment into the polymer melt to achieve an end product with a uniform color. Therefore, it would have been obvious to one having the ordinary skill in the art to use a pigment in the liquid phase throughout the extrusion process to ensure that proper mixing occurs.
8. Regarding claim 2, Jones teaches wherein the twin screw extruder is a co-rotating twin screw extruder. **(See column 7 line 40).**
9. Regarding claim 3, Jones teaches wherein the pigment press cake dispersion contains 15-50 % by weight of pigment. **(See column 4 lines 23-20).**
10. Regarding claim 4, Jones does not teach wherein the outlet port is combined with one or more twin screw locks.
- e. However, Kobayashi teaches wherein the liquid extraction is done by way of a liquid removing screw. **(See column 2 lines 14-29).**
- f. Kobayashi teaches wherein the extrusion screws are utilized to compress the polymer/water mix and squeeze out unwanted moisture from the system. It would have been obvious to use this liquid extraction technique with the teaching

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of Jones to remove the liquid without filtering the polymer melt through another apparatus or flashing the system.

11. Regarding claim 6, Jones discloses the use of a perylene pigment. **(See column 7 line 6).**

12. Regarding claim 7, Jones discloses wherein a surfactant can be used with the pigments as a processing aid. **(See column 6 lines 28-54).**

13. Regarding claim 8, Jones teaches wherein the pigment masterbatch contains 25% pigment and 65% thermoplastic (Nylon). **(See example 2 in column 6 lines 24-28).**

14. Regarding claim 12, Jones teaches a process for adding a pigment (colorant) to a polymeric melt utilizing a multi zone metering process. **(See Abstract and column 5 lines 53-58).**

g. Jones further teaches the steps of:

xi. Metering a thermoplastic resin into a twin-extruder. **(See abstract and column 5 lines 53-55).**

xii. Wherein the resin is molten. **(See column 2 lines 33-38 and abstract, disclosing the polymeric melt.)**

xiii. Then metering an additive which can be a pigment (with water) and is in the liquid phase (aqueous). **(See abstract and column 5 lines 53-55).**

(3) *See specifically column 4 lines 24-34, disclosing that the aqueous dispersant may be a pigment press cake mixed with a dispersant containing water.*

xiv. Possibly adding a flow improver (processing aid; **(See column 3 lines 23-28).**

xv. Mixing the pigment into the molten polymer by shear forces; **(See column 5 lines 3-11, disclosing the use of a twin screw extruder to mix the polymer.)**

xvi. Removing the volatiles (water or solvent); **(See abstract).**

(4) *Also see column 6 lines 18-27, disclosing wherein the water is removed downstream.*

h. With respect to claim 12, Jones does not teach wherein the solvent and/or water from the pigment additive is kept at a pressure which will keep the water/solvent in a liquid phase from introduction into the extruder until the removal of the solvent/water.

i. However, Kobayashi teaches that solvents can be extracted from an extruder while in a liquid phase. **(See column 1 line 54 to column 2 line 29).**

xvii. Kobayashi teaches the use of liquid extraction in conjunction with an extrusion process. Specifically, Kobayashi teaches a squeezing method which uses a screw arrangement to compress the molten polymer/water solution in order to extract the water from the system.

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xviii. Furthermore, it would have been obvious to control the pressure of an extruder by utilizing a pump or a control valve in order to ensure that the pressure of the solvent/water is high enough to stay in the liquid phase after entrance into the extrusion system.

j. Jones and Kobayashi are analogous art because they are from the same field of endeavor which is using a twin screw extruder to effectuate a polymer melt. At the time of the invention, it would have been obvious to one having the ordinary skill in the art, having the teachings of Jones and Kobayashi before him or her, to modify the teachings of Jones to include the teachings of Kobayashi for the benefit of uniformly mixing the pigment with the polymer. The motivation for doing so would be to allow for uniform dispersment of the pigment into the polymer melt to achieve an end product with a uniform color. Therefore, it would have been obvious to one having the ordinary skill in the art to use a pigment in the liquid phase throughout the extrusion process to ensure that proper mixing occurs.

15. *Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jones (European Patent Application EP 0 478 987 A2) in view of Kobayashi et al. (USP No. 6,220,745 and in further view of Bemis et al. (USP No. 5,486,327)).*

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16. Regarding claim 5, the combination of Jones and Kobayashi does not disclose wherein the thermoplastic polymer is a polyethylene, polypropylene, polystyrene, or ethylene vinyl acetate.

k. However, Bemis teaches wherein the plastic used in a pigment mix can be polypropylene. **(See column 4 lines 60-64).**

xix. It is well known and would be obvious to one of ordinary skill in the art to mix colorants with polypropylene to make a colored extrudant.

17. *Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jones (European Patent Application EP 0 478 987 A2) in view of Kobayashi et al. (USP No. 6,220,745 and in further view of Bruzzzone et al. (USP No. 4,714,747)).*

18. Regarding claim 9, the combination of Jones and Kobayashi do not teach wherein the heat of the water and/or solvent is removed via at least one outlet port is used for heating the press cake to be metered.

l. However, Bruzzzone teaches that recycle streams are typically used in extruders in order to reduce energy consumption of the process. **(See abstract).**

m. It is well known in the art to use recycle streams to conserve energy produced in a system by using exiting streams for another purpose, and such use would be obvious to one of ordinary skill in the process of Jones.

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19. *Claims 10-11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jones (European Patent Application EP 0 478 987 A2) in view of Kobayashi et al. (USP No. 6,220,745 and in further view of Silvi et al. (USP No. 6,949,622)).*

20. Regarding claims 10-11, the combination of Jones and Kobayashi do not teach wherein the removal of water and/or solvent is effected by automatic regulation such as a control valve.

n. However, Silvi teaches wherein a control valve is utilized during the removal of a solvent from a polymer-solvent mixture. **(See column 4 lines 24-45 and column 6 lines 6-25.)**

o. It would have been obvious to one of ordinary skill in the art to use a control system to alter the pressure in the extruder, as taught by Silvi, in order to maintain the pressure of the extruder and thus ensure that the solvent does not vaporize.

Conclusion

21. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The reference Koike et al. (USP No. 6,822,022) is cited as it also teaches a two stage extrusion process similar to Jones discussed above where pigment is added in an aqueous phase.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to AMJAD ABRAHAM whose telephone number is (571)270-7058. The examiner can normally be reached on Monday through Friday 8:00 AM to 5:00 PM Eastern Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Phillip Tucker can be reached on (571) 272-1095. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AAA

/Philip C Tucker/
Supervisory Patent Examiner, Art Unit 1791